BBC ELETTROPOMPE

GB

USER'S AND INSTALLATION MANUAL

"Translation of the Original Instructions"

Photovoltaic pumping station

IDROSOLAR 1200 - 1800 - 2800 - 3600

Made in Italy

Idrosolar

Photovoltaic pumping station

MANUAL UPDATING DIAGRAM

Code/Description	N° of revision	Date
L27/ 1ST ISSUE	01	Apr.2014

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WARRANTY

The products have a 24 months warranty against manufacturing defects starting from their installation.

The warranty is limited to either replacement or repairing, at our workshop, of defective products or pieces and does not imply any possible request for indemnity.

The warranty does not include troubles due to wrong electric connection, lack of suitable protection, faulty assembling, wrong operations, defects of installation, any kind of corrosion and abrasion due to the pumped liquid as well as non-observance of the use provided for in the User's and installation Manual.

The warranty is not valid if products are disassembled, repaired or tampered with by unauthorized personnel.

SOME REMARKS ABOUT THE USER'S MANUAL

The User's Manual is not one accessory but an integral part of the pumping station IDROSOLAR, itself and represents a SAFETY MEASURE).

In order to make the consultation of the Manual easier, each subject has been divided into numbered points, which, when required while acting, are shown also on the drawings.

This manual has to be kept properly, near the pumping station IDROSOLAR and delivered to any operator, user or owner.

The manual shall not be damaged; it must be kept integral – do not tear any sheets –, be kept far from humidity and heat sources. While consulting, try not to damage its readability.

The sections to which to pay most attention are put into evidence with symbols and detailed illustrations above the pictures.
Giving these notices, the Manufacturer aims at drawing – in unequivocal way – the operator's attention to ***measures****,* ***dangers*** *and* ***warning*** *related to him/her.*

SECTION 1
PRELIMINARY INFORMATION

1.1
LETTER ON DELIVERY

The pumping station IDROSOLAR is manufactured in compliance with the Directives 2006/42/CE; 2006/95/CE and 2004/108/CE.

BBC informs that any modifications or tampering to the pumping station IDROSOLAR and/or operations carried out in non-compliance with the provisions of this manual, especially the non-observance of the Safety Regulations, imply the non-validity of the Warranty and make the EC Declaration of original Conformity invalid.

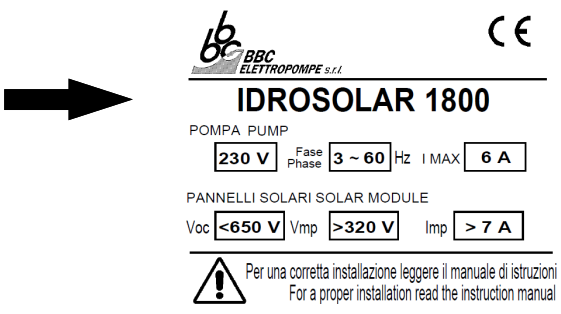
Please, remind that:
The technical data are referred to the pumping station IDROSOLAR 1200 — 1800 — 2800 — & IDROSOLAR 3600 (SEE SECTION 3 – TECHNICAL FEATURES); drawings and any other documents are owned by BBC which reserves all the relevant rights and the same can not be put at third parties' disposal without BBC written authorization.

For this reason, any reproduction – even if partially – of text and illustrations is strictly prohibited.

1.2
MACHINE IDENTIFICATION

In case of contact with BBC or its customer service, as to subjects related to the pumping station IDROSOLAR, always mention the model.

Transcribe the type of electric pump, so that a copy of the manual can be requested, should this one be lost and/or should the label be unreadable.



BBC ELETTROPOMPE s.r.l.
CE

IDROSOLAR 1800

POMPA PUMP
230 V Fase Phase 3 ~ 60 Hz I MAX 6 A

PANNELLI SOLARI SOLAR MODULE
Voc <650 V Vmp >320 V Imp > 7 A

Per una corretta installazione leggere il manuale di istruzioni
For a proper installation read the instruction manual

1.3
GENERAL INFORMATION AT DELIVERY

The pumping station IDROSOLAR, is shipped i inside a rigid packaging.

In any case, when you receive it, always check that:
- *the packaging must be integral;*
- *the solar panels and its accessories have not been damaged.*

Should there be any damage or missing parts, inform the supplier, the forwarding agent or his insurance company immediately, providing him detailed information.

1.4 DESCRIPTION OF PUMPING STATION IDROSOLAR

1.4.1 USE
(PURPOSE - SPECIFIC USE)

The solar stations IDROSOLAR allow pumping water from a well with complete autonomy and can be easily installed anywhere there is a good solar radiation. Using the sunlight, they can produce the energy required to run the pump without batteries.
The IDROSOLAR stations are available in two versions depending on their maximum given power. Each version can be combined with different types of pumps.
The number of revolutions of the electric pump is continuously adapted to available radiation, maximizing the flow of the water pumped. Thus the pump can run even with low solar radiation. When the radiation grows the revolutions of the pump get higher and, consequently , the flow gets bigger.
When the radiation decreases, (passing clouds or different times of the day) the performance of the pump is reduced ,but the system continues to supply water until the radiation does not fall below the minimum necessary for the operation.
In addition, the system is completely protected against overvoltage, over current and lack of water.

1.4.2 IMPROPER USE

CAUTION DANGER OF FIRE AND TOXICITY!

THE ELECTRIC PUMP MUST NOT BE USED TO PUMP DANGEROUS LIQUIDS (either inflammable or toxic).

Any other use different from the **PROVIDED USE FOR** has to be considered as improper use.

1.4.4 MAIN PARTS OF THE ELECTRIC PUMP

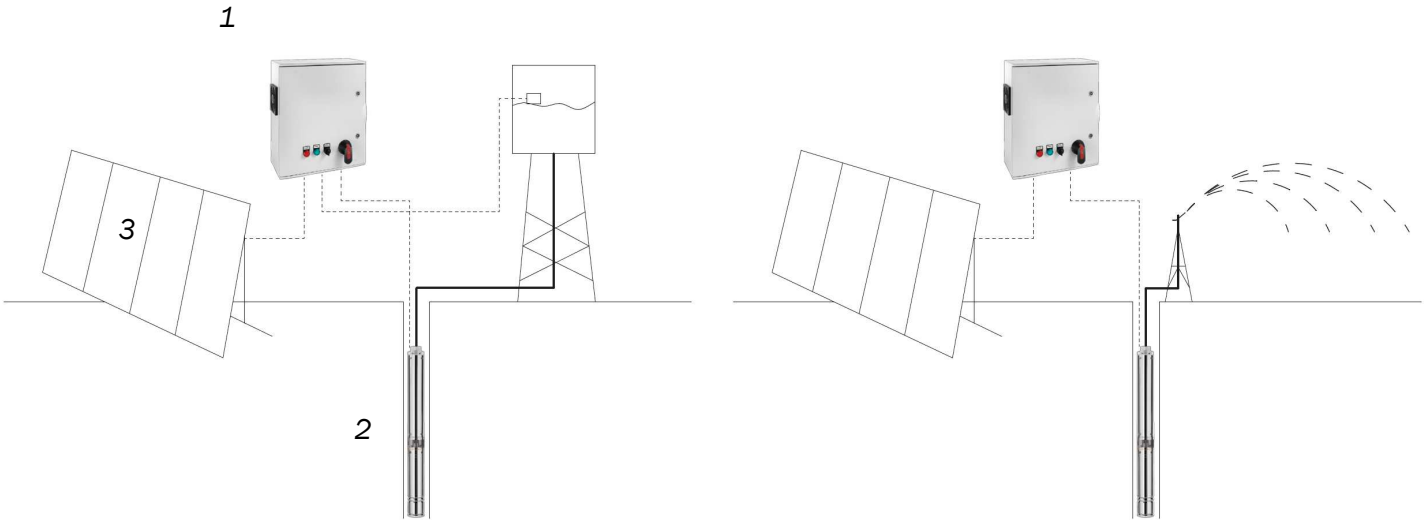
1.4.3 PLACE OF USE

CAUTION DANGER OF EXPLOSION!
THE PUMPING STATION IDROSOLAR MUST NOT BE INSTALLED IN EXPLOSIVE PLACES.

CAUTION DANGER OF ELECTROCONDUCTION

THE PUMPING STATION IDROSOLAR MUST NOT BE INSTALLED IN PLACES WHERE THERE ARE PEOPLE IN CONTACT WITH LIQUIDS (i.e. swimming-pools).

1.4.3
MAIN COMPONENTS OF THE SOLAR PUMPING STATIONS IDROSOLAR



	Pos.	Description	Qty.
	1	***CONTROL PANEL*** • *Function MPPT (Maximum Power Point Tracking) that consents to maximise the electric power and the quantity of water pumped according to the different conditions of solar irradiation and ambient temperature.* • *Complete monitoring of the working parameters ;* • *Complete protection of the pumps against overvoltage, over temperature and lack of water.*	1
	2	***ELECTRIC PUMP*** • *Maximum immersion depth 150 m;* • *Maximum quantity of sand 150 g/m^3;* • *Continuous Duty S1;* • *Protection degree IP68;* • *Insulation class F;* • *Rewindable motor ;* • *Coolant filled asynchronous with short-circuit rotor .*	1
	3	***SOLAR PANEL*** • *Vacuum power (Voc) <40Vdc* • *Max power (Vmp) >29Vdc* • *Max power (Pmax) >240Wp*	6 8 12 16

SECTION 2
SAFETY INSTRUCTION

While consulting this user's manual you will find some symbols that have a precise meaning.

CONVENTIONAL SYMBOLS AND THEIR DEFINITION

CAUTION! DANGER OF ELECTROCUTION!
It indicates to the concerned personnel that the described operation presents risk of ***electric shock*** *if it is not carried out in compliance with the safety regulations.*

CAUTION! GENERAL DANGER!
It indicates to the concerned personnel that the described operation presents risk of physical injury ***SPECIFIED IN TEXT AND SYMBOLS****, if it is not carried out in compliance with the safety regulations.*

NOTE!
It indicates to the concerned personnel information whose subject is to be taken into particular consideration or is important.

WARNING!
It indicates to the concerned personnel information whose subjects, if not observed, may provoke slight injury to persons or damage to the machine.

OPERATOR
Identifies qualified personnel, that is to say with the specific skills required for manual operations.

The operator is absolutely prohibited to carry out operations reserved to the ELECTRIC OR MECHANICAL MAINTENANCE OPERATOR.

MECHANICAL MAINTENANCE OPERATOR
Qualified technician able to manage the machine in normal conditions and able to operate on the mechanical parts in so to carry out all adjustments, maintenance interventions and repairs required .
He/she is not qualified to operate on electric systems with voltage presence.

ELECTRIC MAINTENANCE OPERATOR OR TRAINED PERSON (see EN 60204-1 point 3.52)
Qualified technician able to operate the machine in normal conditions. He/she is put in charge of the interventions of electric adjustment, maintenance and repairing.
He/she is able to operate with voltage presence inside electric panels or control boxes.

PERSONAL PROTECTION
The operator is ***OBLIGED*** *to use devices for personal protection in presence of one of these symbols is present.*

RECOMMENDATION
It is referred to a method of work experienced at the factory, keeping in mind that each operator will develop his/her own way to operate.

SPECIAL INTERVENTIONS
Any special maintenance interventions evidenced by this symbol are to be requested to BBC Elettropompe.

CONTENT

2.1
Before installing the pumping station, the customer shall make sure that the floor on which the machine will be installed is sufficiently levelled and can stand its weight (see **Technical Particulars Section 3**). Furthermore, he/she will verify the presence of technological devices and sufficient room on all sides for any possible maintenance.

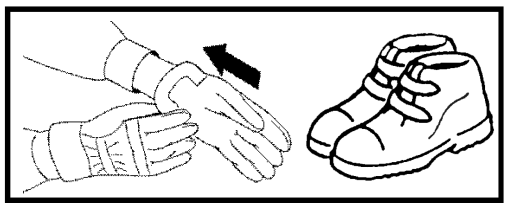
2.2
See drawing (4.4.2) for the electric wiring.

2.3
The personnel chosen for the handling of the electric pump and its accessories will have to wear gloves and accident prevention shoes.

2.4

As for the handling operations of the unpacked machine, See Section 4 - Handling, Installation and Connection

2.5
The operation of servicing, maintenance, repairing of the electric pump shall be carried out only by QUALIFIED ELECTRIC MAINTENANCE OPERATOR OR MECHANICAL MAINTENANCE OPERATOR who knows both safety instructions and content of this manual.
.



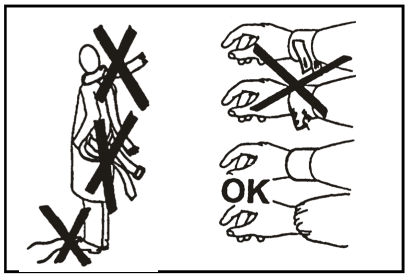
2.6
ZERO POWER STATE
Prior of carrying out any interventions , switch it on **0 "ZERO"**.

- Remove fuses .
- Indicate "WORK IN PROGRESS" by putting a panel on mains switch.
Lock the panel, remove the key and bring it with you.

THE SOLAR STATION IDROSOLAR IS EQUIPPED WITH AUTOMATIC STARTING DEVICES THAT MIGHT START THE PUMP.

2.7
The personnel prepared to operate on the solar station shall have the following IPD (**Individual Protection Devices**) at his disposal:
helmet, protection glasses, oxygen set, safety sling, gloves, accident prevention shoes, which shall be used when required

The same personnel shall also:
- Wear work overalls with closed cuffs;
- Tie hair if this is long;
- Never wear fluttering and/or torn objects and/or clothing (i.e., necklaces, watches, rings, bracelets, scarves, neckerchiefs, ties, etc.).



.2.8

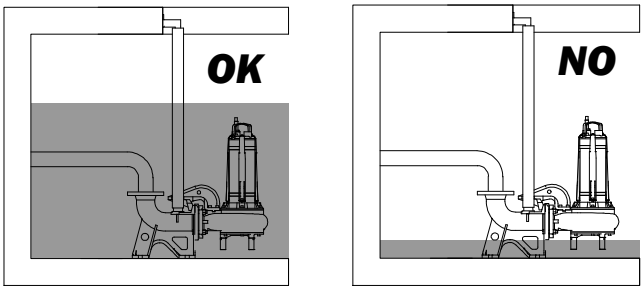
CAUTION! DANGER OF INFECTIONS!
Before carrying out any interventions on the electric pump, the personnel operating shall make sure to use all the hygiene and health measures;

2.9
NOTE!

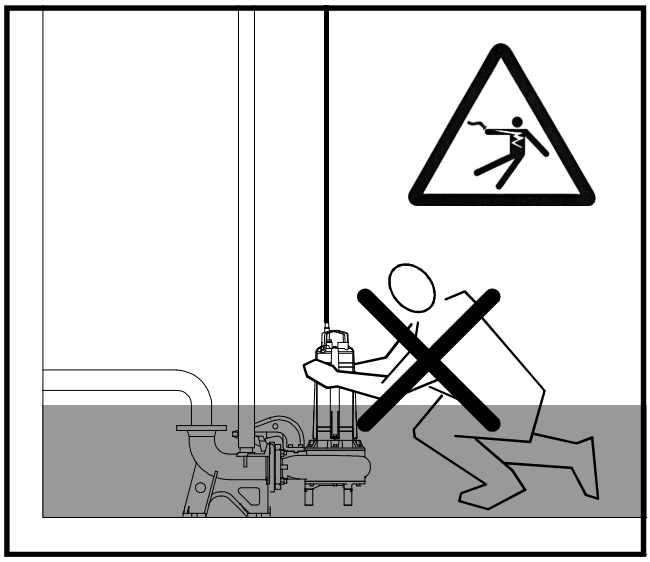
Do not move and do not handle the pumping station IDROSOLAR by using its cables.

2.10
CAUTION! DANGER OF SHEARING, CUTTING AND ABRASION!
Be extremely carefully while handling the aluminium parts of the station.

2.11
Start the electric pump provided with the pumping station IDROSOLAR only when this is completely well-fixed and permanently installed. ***NEVER START IT WITHOUT LIQUID.***



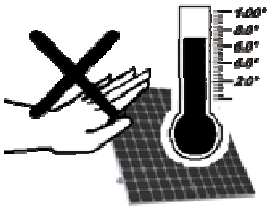
2.15
CAUTION! DANGER OF ELECTROCUTION!
The electric pump provided with the pumping station IDROSOLAR ***MUST NOT be used NOR started*** *if somebody is in contact with the liquid to be pumped.*



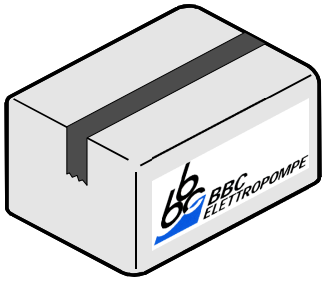
2.13
IT IS FORBIDDEN TO CARRY OUT IMPROVISED REPAIRINGS JUST TO START WORKING IN ANY CASE.

2.14
Make sure that there are no tools, rags and other material left inside the electric panel or where it is installed.

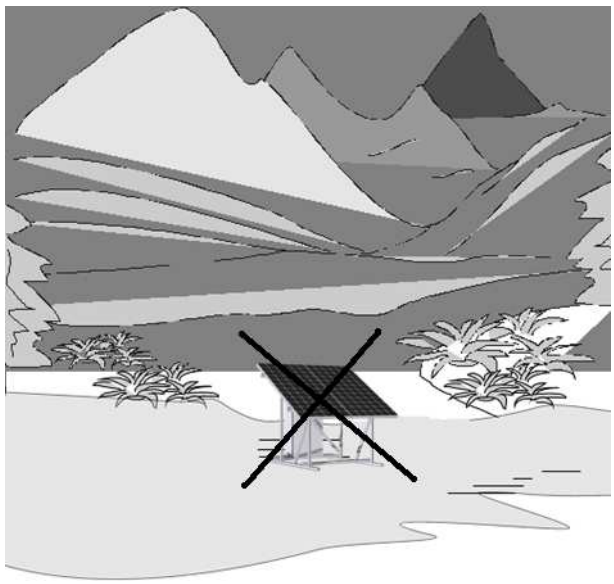
2.15
Since the electric pump can reach very high temperatures, wait until it cools down before handling it



2.16
Always *use and ask for original spare parts*



2.17
As soon as the solar pumping station IDROSOLAR has finished its life cycle, do not get rid of it in the environment.
Please contact the firms in charge for Waste Disposal



PART 3
TECHNICAL CHARACTERISTICS

Performance characteristics with maximum irradiation

Type	Pump Type	P1 KW	*Solar modules n°	Cable m	DNM	Flow m³/h	0	0,6	1,2	1,8	2,4	3	3,6	4,2	4,8	5,4	6	6,6	7,2
						l/min	0	10	20	30	40	50	60	70	80	90	100	110	120
						Total manometric head in meters													
Radial Impeller																			
IDROSOLAR 1200	**15/60**	1,2	6	2	1"½		92	90	85	78	66	50	30						
IDROSOLAR 1800	**15/60**	1,8	8	2	1"½		126	122	119	113	101	86	67	44					
IDROSOLAR 2800	**23/60**	2,8	12	2	1"½		193	188	182	173	154	131	102	68					
IDROSOLAR 3600	**30/60**	3,6	16	2	1"½		251	245	238	225	201	171	134	89					
IDROSOLAR 1200	**9/100**	1,2	6	2	1"½		57		55	54	53	50	46	41	34	26	18		
IDROSOLAR 1800	**9/100**	1,8	8	2	1"½		80		78	77	76	74	71	65	59	52	43	33	23
IDROSOLAR 2800	**14/100**	2,8	12	2	1"½		124		120	119	118	115	111	102	92	81	67	54	36
IDROSOLAR 3600	**18/100**	3,6	16	2	1"½		160		155	153	151	148	142	131	119	104	86	70	47

Performance characteristics with maximum irradiation

Type	Pump Type	P1 KW	*Solar modules n°	Cable m	DNM	Flow m³/h	0	4,5	6	7,5	9	10,5	11,4	13,5	14,4	18	21	25,2
						l/min	0	75	100	125	150	175	190	225	240	300	350	420
						Total manometric head in meters												
Radial Impeller																		
IDROSOLAR 1200	**6/180**	1,2	6	2	2"		37	32	29	25	20	13						
IDROSOLAR 1800	**6/180**	1,8	8	2	2"		53	46	43	39	34	28	24	13				
IDROSOLAR 2800	**9/180**	2,8	12	2	2"		80	68	64	58	51	42	36	20				
IDROSOLAR 3600	**12/180**	3,6	16	2	2"		107	92	85	77	67	55	47	24				
IDROSOLAR 3600	**6/230**	3,6	16	2	2"		82	79	76	73	67	62	57	46	40			
IDROSOLAR 2800	**6/250**	2,8	12	2	2"		57	51	48	46	44	40	37	30	26	11		
IDROSOLAR 3600	**8/250**	3,6	16	2	2"		76	68	65	62	58	53	49	40	35	12		
IDROSOLAR 3600	**4/330**	3,6	16	2	2"		58	55	53	52	51	49	48	44	42	35	26	

P1: Max input power

* Characteristics of each module:

- Open circuit voltage (Voc) <40 V
- Maximum power voltage (Vmp) >29 V
- Maximum power rating (Pmax) ≥240 Wp

SECTION 4
HANDLING, INSTALLATION AND CONNECTION

Before starting the handling, installation and connection, read carefully the ***Safety Instructions at Section 2*** *and the* ***Technical Features at Section 3*** *of this manual.*

4.1
PRELIMINARY INFORMATION ABOUT, HANDLING, INSTALLATION AND CONNECTION

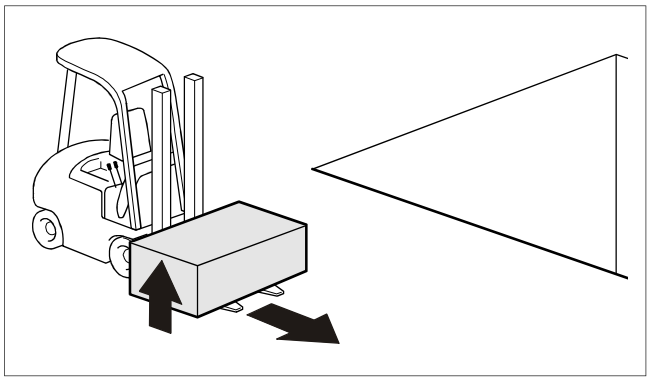
4.1.1

CAUTION! DANGER OF CRUSH, SHOCK AND ABRASION!

The personnel operating while handling and installing the electric pump shall wear gloves, accident prevention shoes and helmet.

4.1.2

Position the electric pump (and relevant accessories) near the place of installation by means of lifting equipment, fork lift or hand pallet truck.



4.1.3

While installing the solar pumping station IDROSOLAR, ***NEVER*** *work alone, use safety belts and individual protection devices (****IPD****).*

4.1.4

CAUTION! DANGER OF INTOXICATION OR POISONING DUE TO TOXIC GAS!

Before installing the electric pump, make sure that there is neither toxic nor inflammable gas.

4.1.5

CAUTION! DANGER OF SLIPPING!

Before installing the electric pump, make sure that there is no mud in the place of installation.

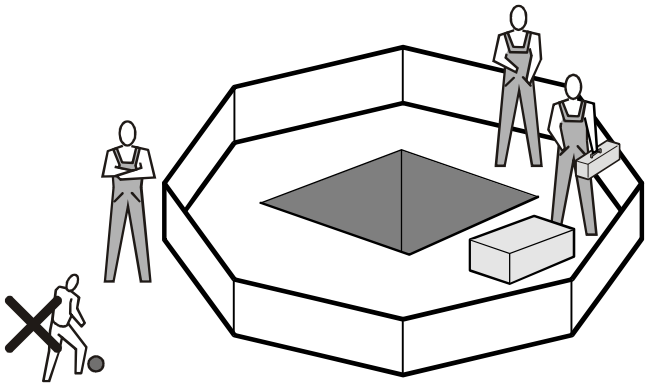
.

4.1.6

Make sure to have sufficient room in the place where solar pumping station IDROSOLAR will be installed.

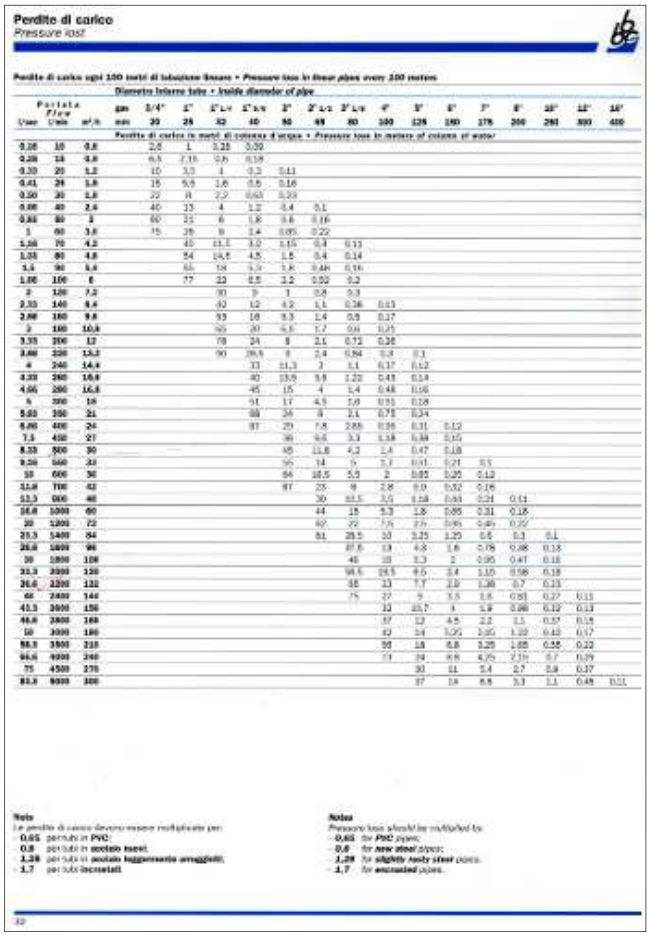
4.1.9

Enclose the installation area with suitable barriers.

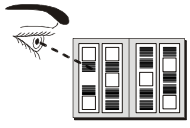


4.1.8
It is advisable to install a NON-RETURN valve at least at 1 (one) metre from the delivery outlet to avoid a possible flow-back of liquid through the delivery pipe.

4.1.9
Make sure that the electric pump to be installed is suitable for the system (see piping Ø, flow of the electric pump, pipe length, etc.).
You can also consult the table of BBC General catalogue "pressure loss".


Perdite di carico
Pressure lost

NOTE
4.1.10



Before the installation, read all the paragraphs (4.2, 4.3 and 4.4) so as to be ready to any need.

4.1.11
The preliminary information concerning HANDLING, INSTALLATION AND CONNECTION are finished.

4.2 ELECTRIC CONNECTION


4.2.1
CAUTION!
*During the operations of electric connection, the **DANGER OF ELECTRIC SHOCK** is present. For this reason the operation will have to be carried out only by trained personnel (see EN 60204.1 point 3.52).*

4.2.2

Have the connection diagram at your disposal (see 4.4.2).

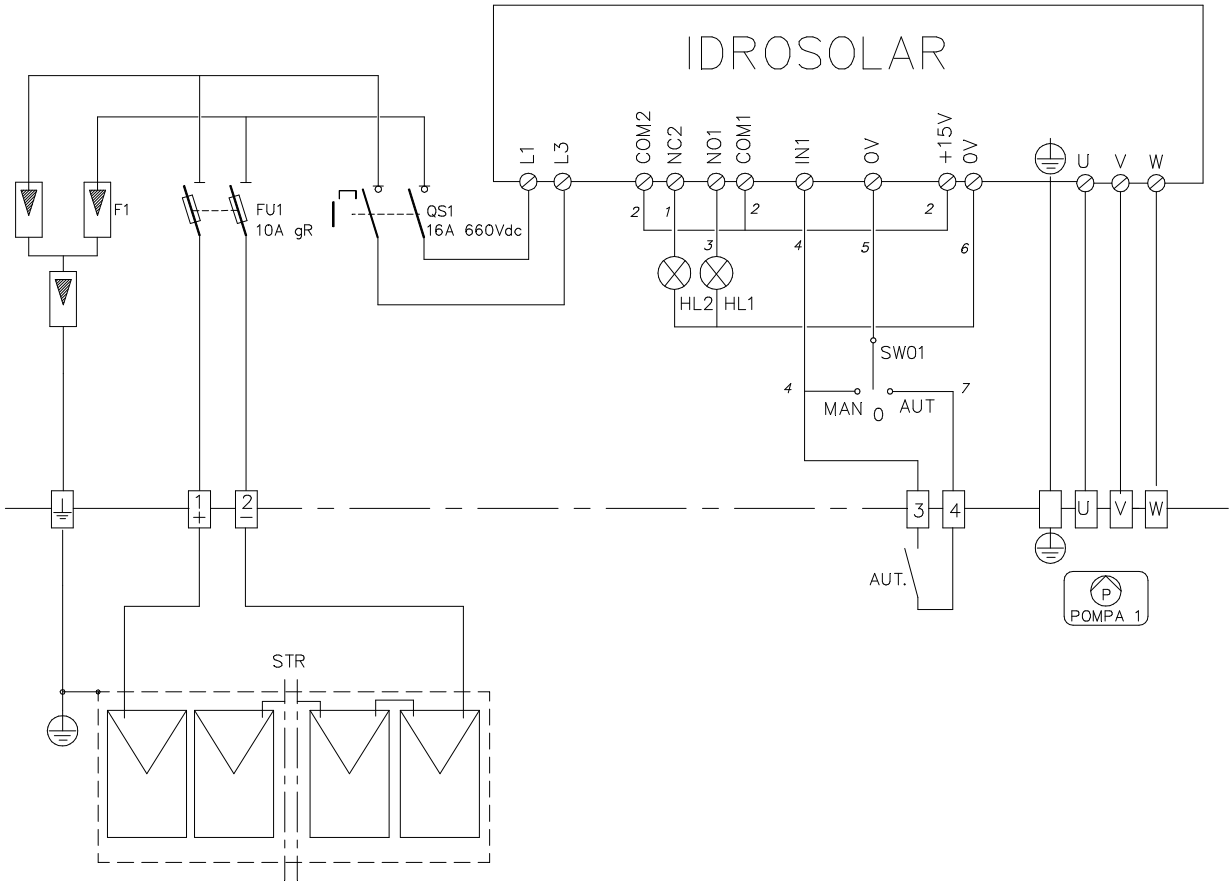
4.2.3
ELECTRIC PANEL

***TECHNICAL** FEATURES*
- Solar Inverter IDROSOLAR;
- Facilities for pressure switch, start-stop float switch, etc.
- HAND-OFF-AUTO selector switch;
- Indicator lights: run—alarm;
- Fibreglass cabinet that can be fixed to the main structure;
- Fuse holder with 10A rR 1000V fuses for photovoltaic systems;
- Over current protection device for photovoltaic systems;
- 16A 660V DC opening interlock.

4.2.4
SYMBOLS OF THE MAIN COMPONETS OF THE ELECTRIC PANEL.

- QS1	Opening Interlock 2p 16A 660Vdc
- IDROSOLAR	Solar Inverter ;
- F1	Over-current protection device for photovoltaic systems PVISPRO 3M 1000Vdc;
- FU1	10A rR 1000V Protective Fuse in ENTRANCE of the set of panels
- SW01	HAND-OFF-AUTO Selector switch for the electric pump;
- HL1 (NO1-COM1)	led Indicator light for RUN;
- HL2 (NO2-COM2)	led Indicator light for ALARM ;
- AUT	Automatic device (i.e. float switch, pressure switch, etc.)
- STR	Set of panels FV connected in series.

4.2.5
DRAWING



4.2.6
POWER CABLE

The electric pump is supplied with a power cable 2 meter long.
IF THE LINE IS OVER 10 METRES DISTANT SEE THE TABLE OF THE BBC GENERAL CATALOGUE "CABLE CHOICE"
If the line is over 5 metre distant, please refer the table below.

Make ABSOLUTELY WATER-PROOF JOINTS .

	Size of the cable in mm^2				
Mod.	**4 x 1,5**	**4 x 2,5**	**4 x 4**	**4 X 6**	**4 X 10**
	Maximum cable length in meters				
IDROSOLAR 1200	25	40	70	100	170
IDROSOLAR 1800	30	50	80	125	210
IDROSOLAR 2800	30	50	80	125	210
IDROSOLAR 3600	25	40	65	100	160

4.2 .7

Electromagnetic compliance

To ensure electromagnetic compatibility (EMC) of the system, it is necessary to apply the following measures

☐ *Make sure that the system is equipped with proper EARTHLING and duly connected.*
☐ *Use the shortest possible motor cable (<1 m / <3 ft). For longer lengths, it is recommended to use shielded cables connecting the screen at both ends.*
☐ *Separate signal, motor, and power supply cables*

Note: *To enable the restoration of the display screen when there are electromagnetic interferences, the IDROSOLAR system periodically provides some fast "refresh" of the display.*

4.3 ELECTRIC CONNECTION

Turn the MAIN SWITCH on "0" (zero).

4.3.1 Access to the terminal board

Turn the MAIN SWITCH on "0" (zero), open the control panel end extract the fuses.

4.3.2
ELECTRIC WIRING TO THE TERMINAL BOARD.

*The **electric pump** is supplied with a four-wire power supply cable. The yellow/green wire has to be connected to the earthling system.*
The remaining three wires must be connected to terminals U - V - W.

The wires coming from the photovoltaic system (red - black):

- *have a 6 mm² section;*
- *must be wired to terminals 1 and 2.*

Str1: string 1 for systems IDROSOLAR 1800

AUTOMATIC DEVICE:

*- **AUT** Automatic device (i.e float switch - pressure switch etc).*

NOTE:

High voltage might continue in the DC bus even when the LED are OFF.

Before touching any part of the frequency converter, wait, at least, 5 minutes.
Check that all electric cables are in good state and the terminals are well tightened to relevant clamps.
A periodic check of the correct functioning of the electric protections is recommended
In case of intervention of one of the protections, check the reason before restoring the system.
Install the control and protection devices in rooms suitable to their IP protection degree.

4.3.3
CONNECTION OF THE SOLAR PANELS

Turn the MAIN SWITCH on "0" (zero).

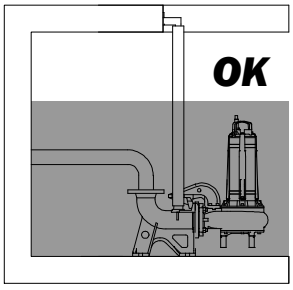
The pre-wired cables to connect to the solar panels come out from the lower side of the panel. They must be wired respecting poles and colours.

4.3.4
THE ELECTRIC CONNECTION is finished.

SECTION 5
START-UP

5.1
*The operator must have read this user's and installation manual and, particularly, well read and understood the "**Safety Instructions**" of Section 2*

5.2
Before starting the electric pump to be connected to, make sure that there is liquid to be pumped inside the basin and that the electric pump is submersed.



5.3
Make sure that either basin or pit are properly closed.

5.4
Before starting the electric pump, turn the switch on MAN.

The electric pump is started and the extraction of liquid begins.

5.5

Turn the SWITCH on "0" to stop the electric pump

.

5.6
The START-UP is completed.

5.7
CHECK OF THE AUTOMATIC DEVICES
Turn the switch on "AUTO". The electric pump will start or stop according to the status of the automatic devices (i.e. float switches, pressure switches etc.)

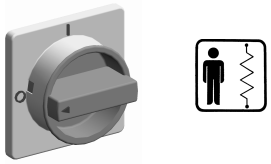
SECTION 6
STOPPING AND CLEANING

6.1
The operator must have read this user's and installation manual and, particularly, well read and understood the "Safety Instructions" of Section 2.

6.2

Turn the SWITCH on "0" to stop the electric pump and extract. the fuses.

6.3
IN CASE OF LONG PERIODS OF STOP IT IS NECESSARY



a - to turn the MAINS SWITCH on "0" and extract the fuses;

*b - **CAUTION-DANGER OF ELECTRIC SHOCK!***
This operation shall be carried out by an ELECTRIC MAINTENANCE OPERATOR
Disconnect the power supply cable from the terminal board of the MAINS SWITCH

c - Pull out the electric pump

d - Clean all its parts properly, by using a hot-water cleaner

e - Roll up the power supply cable

f - Store it in a place where the temperature does not fall below 0° .

6.4

STOPPING AND CLEANING are completed.

SECTION 7
MAINTENANCE

*As for any maintenance, repairing and cleaning (that **FOR LONG STOPS OR PERIODS OF IDLENESS** excepted), please contact BBC Elettropompe which will provide you with all relevant instructions*

SECTION 8
PROGRAMMING

IDROSOLAR IS SUPPLIED ALREADY PROGRAMMED. IT IS READY TO BE USED.

IDROSOLAR	Voc (V)	I (A)	F (Hz)	Vmot (V)
1200	225	8	50	110
1800	300	11	60	135
2800	450	9.5	60	220
3600	600	12	60	230

8.1
IDROSOLAR Solar Use and Programming

The IDROSOLAR software is extremely simple to use, but it allows a wide variety of parameters to be set for the best calibration of the system. The setting of the Parameters is organized in 2 levels:

***1.** Installer Level:*
A password is required for this level; these parameters are adjustable by trained professionals

Default password: 001

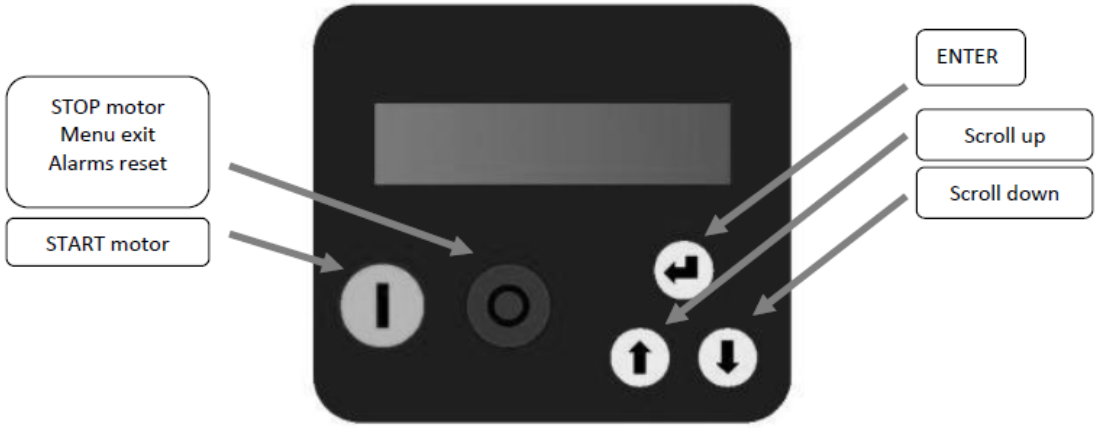
2. Advanced Level:

Improper setting of these advanced parameters could compromise the integrity and the life of IDROSOLAR as well as that of the pump;
Default password 002
It is possible to set up a different password.

Installer and Advanced levels can be entered only with the correct password; otherwise, it is impossible to set up and/or modify any parameters (they can be only displayed)

8.2
Display

The screen is a back-lit LCD displaying 2 rows of 16 digits each. Alarms are indicated by an audible signal.



8.3
Initial configuration

When the IDROSOLAR pumping is switched on for the first time, the LCD screen displays the initial setting menu. The required parameters must be entered according to the pump installed and the characteristics of the system. If the initial setting procedure is not completed properly, it is impossible to run the pump. Initial setting procedure can be repeated if necessary.
The initial setting procedure can be repeated (by using the 2nd level password).
A brief description of parameters and their allowable ranges are listed below:

Parameter	Default	Description
Language	*ENGLISH*	End user communication language
Open circuit Volt. PV	*P.8 (Voc)*	Open circuit voltage of PV strings. Please refer to PV panels datasheet.
Rated motor Volt. *V = XXX [V]*	*P.8 (Vmot)*	Motor rated voltage (as shown in the motor plate) Average voltage drop due to the inverter is between 20 V and 30 Vrms based on load condition.
Rated motor Amp. *I = XX.X [A]*	*P.8 (In)*	Rated current of the motor per it's nameplate indication increased by 10%. The voltage drop caused by the inverter leads to higher input current than nominal. Make sure motor is capable of accepting increased current.
Rated motor freq	*P.8 (Hz)*	Rated frequency of the motor per its nameplate.

Control mode: MPPT		
Motor test *START/STOP*		*Press START/STOP to run a test at rated frequency* ***Warning: make sure to run the system without damaging pump and system***
Rotation sense *---> / <---*	*--->*	If, during the test, the motor runs in reverse, it is possible to change the wiring sequence via software without physically changing wires at the terminals.
Autorestart *ON/OFF*	*ON*	*If ON is selected, after a lack of voltage, VASCO Solar returns to its normal status; if VASCO Solar was powering the pump before the voltage drop, it resumes powering the pump automatically.* *Warning, review the advice in chapter 1*
INITIAL SETUP *COMPLETED*		Once the Setting procedure is completed you will get this indication on the display; setting parameters are recorded by VASCO Solar; these parameters can be set up individually in the INSTALLER Parameters menu or ADVANCED Parameters menu.

8.3 Initial view

When the IDROSOLAR pumping unit is switched on for the first time, the display shows : release of display software (LCD = X.XX) and the release of inverter software (INV = X.XX) as shown below:

LCD = X.XX
INV = X.XX

The following End User messages are displayed by pushing the scroll buttons	
Inv: ON / OFF Mot: ON / OFF *p = XX.X [bar]*	***P** is the pressure value read by the pressure transducer.* *By pressing **ENTER** the pressure set value is displayed <XXX.X>*
Inv: ON / OFF Mot: ON / OFF *V_IN = XXX [Hz]*	***V_IN** is the line voltage.*
Inv: ON / OFF Mot: ON / OFF *I = XX.X [A]*	***I** is the current absorbed by the motor.*
Inv: ON / OFF Mot: ON / OFF *cosphi = XXX*	***Cosphi index** is the angle phi between the voltage and current absorbed by the motor*
Inv: ON / OFF Mot: ON / OFF *P = XXXXX [W]*	***P** is the power, in Watts, supplied to the pump*
Inv: ON / OFF Mot: ON / OFF *STATO: NORMALE*	***NORMAL** status means no alarms.* *If an alarm occurs, a message blinks on the display and an audible signal is activated.* *Pressing **ENTER** accesses:* ***IDROSOLAR** lifetime,* *consumption statistic,* *alarm list.* *To return to previous views, press **ENTER***
Life of the Inverter *xxxxx h: xx m*	
Life of the motor *xxxxx h: xx m*	
% f 25 50 75 100 *% h XX XX XX XX*	
XXXXXXXXXXXXXX *XXXXXX h: XX m*	

First row gives the status of IDROSOLAR:

- ***Inv: ON XXX.X Hz** IDROSOLAR is powered and is powering the motor showing its frequency.*
- ***Inv: ON Mot: OFF** IDROSOLAR is powered but motor is not running*
- ***Inv: OFF Mot: OFF** IDROSOLAR is not powered*

8.5 Menu view
By pressing ENTER when you are in the initial display [MENU' / ENT to access] , the following MENUs will be shown:

MENU ' *Install. param.*	*Installer password required to enter level 1 (default 001)*
MENU' *Advanced. param.*	*Advanced Password required to enter level 2 (default 002)*
MENU ' *Retrieve init. et*	*Installer password required to enter level 1 (default 001)* *It is possible to return to original set parameters.*
MENU' *Change init. set.*	*Advanced Password required to enter level 2 (default 002)*

8.6 Parameters of the Installer
Many of the Installer parameters are set during the Initial Configuration.
However, through the Installer Parameters menu, it is possible to change the set parameters or set others in order set, properly, the IDROSOLAR to the pumping system.

PARAMETER	***DEFAULT***	***DESCRIPTION***
Operating frequency *f = XXX [Hz]*	*P.8 (Hz)*	*Set the frequency to run the electric pump.*
Sense of rotation *---> / <---*	*--->*	*If, during the test, the motor runs in wrong sense, it is possible to change the wiring sequence via software without physically changing wires at the terminals.*
Dry Run cosphi *cosphi = X.XX*	*0.50*	*In case of dry-running of the pump , the cosphi reaches its lowest level. To set this value, contact the pump manufacturer or test by closing the suction and checking the value on the IDROSOLAR display; a value can be set by assuming a dry cosphi equivalent to 60% of the rated cosphi specified by the manufacturer.*
Re-start delay *t = XX [min]*	*10*	*Restart delay after a dry running alarm. At each attempt (5 max) the restart delay will be doubled.*
Digital Input 1 *N.O. / N.C.*	*N.C.*	*By selecting **N.A**. (normally open) IDROSOLAR starts the motor if the digital input 1 is open; the motor will be stopped if the digital input 1 is closed.* *By selecting **N.C**. (normally closed) IDROSOLAR starts the motor if the digital input 1 is closed; the motor will be stopped if the digital input 1 is opened.*
Change password 1 *ENT*		*Pressing ENT allows the installer level password (1st level) to be changed (default 001).*

8.7
Advanced Parameters

All the advanced parameters, due to their importance, are already set during initial setup (cap. 6.2 Initial Configuration). However, it is always possible to change individual parameters or modify the password 2.

PARAMETER	DEFAULT	DESCRIPTION
Open Circuit Volt. PV V = XXX [V]	P.8 (Voc)	Open circuit voltage of PV strings. Please refer to solar panels datasheet.
Rated motor voltage. V = XXX [V]	P.8 (Vmot)	Motor rated voltage (as shown in the motor plate) Average voltage drop due to the inverter is between 20 V and 30 V rms based on load condition.
Voltage boost V = XX [%]	1%	Refers to the voltage increase during the start up of the motor. Warning: An excessive value can seriously damage the motor. Contact the motor manufacturer for further information.
Rated motor Amp. I = XX.X [A]	P.8 (I)	Rated current of the motor per it's nameplate indication increased by 10%. The voltage drop caused by the inverter leads to higher input current than nominal.
Rated motor freq f = XXX [Hz]	P.8 (Hz)	Rated frequency of the motor.
Max Freq. f = XXX [Hz]	P.8 (Hz)	Maximum frequency of the motor.
Min motor freq. **f = XXX [Hz]**	30	Minimum frequency of the motor. **Note**: for submersible pumps with water filled motors, it is NOT advisable to set the minimum frequency below 30 Hz in order to protect the integrity of the thrust bearings.
Ramp up time t = XX [sec]	4	Ramp-up time. Excessively long ramp-up times can cause false overload alarms.
Ramp down time t = XX [sec]	4	Ramp-down time to reach zero speed.
Ramp f min mot. t = XX [sec]	1.5	Time to reach the minimum frequency of the motor and vice versa.
PWM f = XX [kHz]	2,5	Carrying frequency. (Switching frequency). It is possible to choose PWM in the range of 2.5 ,4, 6, 8, 10 kHz. If long cables are used (>20 m / >76 ft) (submersible pumps) it is recommended to install an inductive filter between the IDROSOLAR and the motor (available on request) and to set the value of PWM to 2.5 kHz. This reduces the risk of voltage spikes, which can damage motor and cable insulation.

PARAMETER	DEFAULT	DESCRIPTION
V / f lin. -> Quad. XXX%	85%	This parameter allows you to change the V / f characteristic with which IDROSOLAR feeds the engine. The linear characteristic corresponds to constant torque with variable speed. The quadratic characteristic is normally used with centrifugal pumps. The selection of torque characteristic should be done ensuring a smooth operation, a lower energy consumption and a lower level of heat and acoustic noise.
Auto Restart ON / OFF	ON	If ON is selected, after a lack of voltage, IDROSOLAR returns to its normal status.
Periodic autorun t = XX [h]	0	Periodic autorun of the pump after XX hours of inactivity.
Change password 2 ENT		Press ENT if you want to change the advanced level password (2nd level) (default 002).

SECTION 9
Protections and alarms.

Anytime a protection occurs a blinking message is displayed together with an audible alarm; on STATUS in the initial view, the protection is displayed; by pressing the STOP button. Only from this position (STATUS) in the initial view it is possible to try to reset the alarm; if IDROSOLAR does not reset the alarm, the message is displayed again together an audible sound.

ALARM MESSAGE	DESCRIPTION OF THE ALARM	POSSIBLE SOLUTIONS
OVERCURRENT MOT.	Motor overload: input current of the motor is higher than the rated motor current setting parameter.	☐ Make sure that the setting of the motor current is higher than the nominal. ☐ Check other possible causes of over current
UNDER VOLTAGE	Power supply too low	Check the possible causes of low voltage
OVER VOLTAGE	Power supply too high	Check the possible causes of over voltage
OVER TEMP. INV.	Overheating of the Inverter	☐ Make sure than ambient temperature is less than 40 °C (104 °F). ☐ Check if the cooling fan is working fine . ☐ Reduce the PWM value (Advance Parameter Menu)
NO LOAD	NO LOAD	Check if the load is duly connected to the terminals of IDROSOLAR.
NO WATER (DRY RUN cosPhi)	The motor cosphi is lower than the set value of dry running cosphi.	☐ Check if the pump is submersed. ☐ Check the set value of dry running cosphi. Dry running cosphi is approximately 60% of the rated cosphi (at rated frequency) listed on the motor plate.

ALARM MESSAGE	DESCRIPTION OF THE ALARM	POSSIBLE SOLUTIONS
SENSORE FAULT	Sensor error	☐ Check the transducer ☐ Check the wiring of the transducer
MAX. VALUE A-LARM	Measured value has reached the maximum value accepted by the system	☐ Check possible causes of reaching max value ☐ Check the max alarm value setting.
MIN. VALUE A-LARM	Measured value has reached the minimum value accepted by the system.	☐ Check possible causes of reaching min value (i.e. broken pipe, the safety valve is open, etc.) ☐ Check the min. alarm value setting
IGBT TRIP ALARM	The current drawn by the load exceeds the capacity the IDROSOLAR. is still able to continue to power the load for 10 minutes is still able to continue to give power to the load for 10 minutes with an output current of 101% of the nominal value and for 1 minute with an output current of 110% of its nominal.	☐ Increase the ramp-up time; ☐ Make sure that the load current is at least 10% below the nominal current of the IDROSOLAR unit. ☐ Check the voltage drop along the power cable of the motor.
NO COMMUNICA-TION	The communication between master and slave (s) has been interrupted.	☐ Check the connections of the wires ☐ Make sure that Master is not in the Menu level. In this case, exit from this level.. ☐ In SLAVE status (where the alarm is displayed) try to reset the alarm by pushing the STOP button.
KEYBORAD FAULT	A button on the keyboard has been pressed for more than 150 seconds.	☐ Make sure that no button is pressed. ☐ Call assistance
ACTIVE DIG.IN.X	Digital input X open / closed	☐ Check the input digital setting (Installers Parameters Menu)
ALARM SLAVE XX	Error XX slave detected by Master	☐ Check the status of the slave
	If the cosphi of the pump is lower than the dry-running cosphi for at least 2 seconds, IDROSOLAR turns the pump off. IDROSOLAR will try to start the pump automatically evry 10, 20, 40, 80, 160 minutes and then the pump is stopped. ATTENTION: if a dry-running protection occurs, IDROSOLAR will try to start the pump automatically. Make sure to cut power supply before attempting any maintenance. IDROSOLAR will stop the pump if the input motor current is higher than the set motor current for an extended time. Press the START button to run the pump.. IDROSOLAR will stop the pump if the input voltage is higher than the set voltage for an extended time. Press the START button to run the pump. IDROSOLAR will stop the pump if the input voltage is lower than the set voltage for an extended time Press the START button to run the pump.	

IT - Costruttore *e luogo di archiviazione del fascicolo tecnico:*
GB - Manufacturer *and place where all technical records are filed:*
FR - Constructer *et place ou tout le dossier technique est déposé:*
DE - Hersteller *und Ort der Aufbewahrung der technischen Unterlagen:*
ES - Fabricante *y el lugar donde todos los expedientes técnicos se presentan:*

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IT - DICHIARAZIONE CE DI CONFORMITA':

Prodotti: IDROSOLAR

Dichiariamo che i prodotti sopraelencati sono conformi alle seguenti Direttive:

- **MACCHINE 2006/42/CE;**
- **BASSA TENSIONE 2006/95/CE;**
- **COMPATIBILITA' ELETTROMAGNETICA 2004/108/CE**

ed alle seguenti norme armonizzate:

- **SICUREZZA DEL MACCHINARIO UNI EN ISO 12100**

GB - CE STATEMENT OF CONFORMITY:

Products: IDROSOLAR

We declare that the products listed above comply with the following Directives:

- **MACHINERY 2006/42/EC;**
- **LOW VOLTAGE 2006/95/EC;**
- **ELETROMAGNETIC COMPATIBILITY 2004/108/EC.**

and to the following harmonised standards:

- **SAFETY OF MACHINERY UNI EN ISO 12100**

FR - DECLARATION CE DE CONFORMITE:

Produits: IDROSOLAR

Nous déclarons que les produits énumérès ci-dessus sont conformes aux Directives suivantes:

- **MACHINES 2006/42/CE;**
- **BASSE TENSION 2006/95/CE;**
- **COMPATIBILITE ELECTROMAGNETIQUE 2004/108/CE.**

et aux norme harmonisées suivantes:

- **SÉCURITÉ DES MACHINES UNI EN ISO 12100**

DE - KONFORMITÄTSERKLÄRUNG CE:

Produkte: IDROSOLAR

Wir, den hier unterzeichnende, daß die vorgenannten Produkte entsprechen folgenden Richtlinien:

- **MASCHINENRICHTLINIE 2006/42/EG;**
- **NIEDERSPANNUNGSRICHTLINIE 2006/95/EG;**
- **RICHTLINIEN DER ELEKTROMAGNETISCHEN KOMPATIBILITAT 2004/108/EG.**

und den folgenden harmonisierten Normen:

- **SICHERHEIT VON MASCHINEN UNI EN ISO 12100**

ES - DECLARACION CE DE CONFORMIDAD:

Productos: IDROSOLAR

Declaramos que los productos arriba indicados se hallan conformes a las Directivas siguientes:

- **MAQUINAS 2006/42/CE;**
- **BAJA TENSION 2006/95/CE;**
- **COMPATIBILIDAD ELECTROMAGNETICA 2004/108/CE.**

y a las normas armonizadas siguientes:

- **SEGURIDAD DE LAS MÁQUINAS UNI EN ISO 12100**

Fossombrone, 22/10/2013

Il Legale Rappresentante
Mario Cecchini

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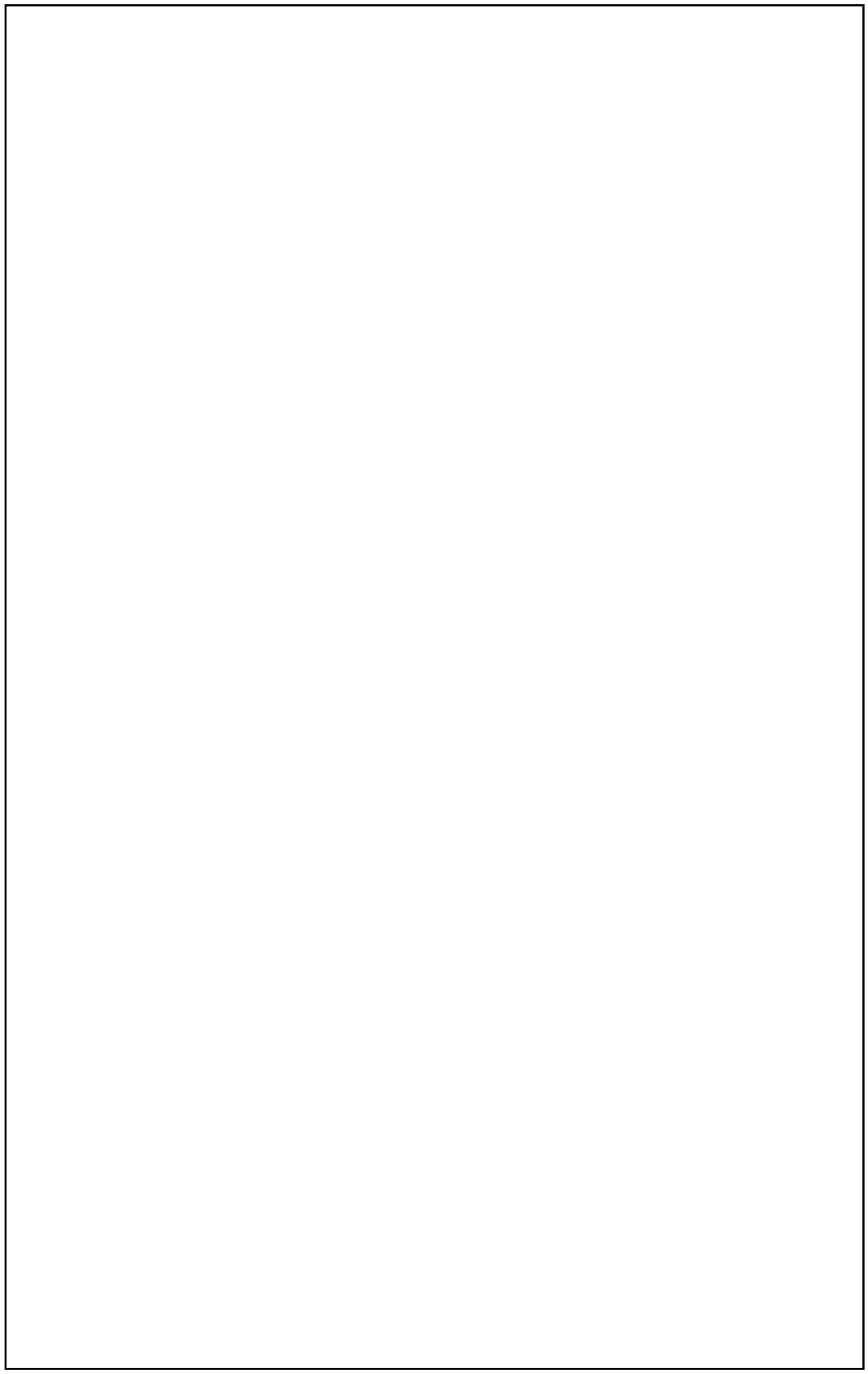
PLATE DATA



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